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ABSTRACTS OF TUBERCULOSIS

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Tuberculosis Control.—The Tuberculosis Committee of the American Student Health Association has sponsored a program for Tuberculosis Control among college students. The Committee suggests tuberculin testing of each student, taking X-ray film of the lungs in every positive reactor, a follow-up of all positive reactors, annual retesting of negative reactors. Every human being on the campus should be examined, too. For the academic year of 1938–39 questionnaires were sent to 857 colleges and universities, and 282 replies were received. Out of 33,000 students tested with PPD, 30.5 per cent gave positive reaction to the standard second-strength dose; out of 21,000 students tested with OT up to 1.0 mg., 30.1 per cent reacted. In 52 colleges reactors are being X-rayed every year. One hundred sixty-five schools with 350,000 students report some tuberculosis control program. Among these there were found 241 clinically active and 368 apparently arrested cases, while 320 previously diagnosed cases were back in college under observation. As a typical example the tuberculosis control program at Carleton College, Northfield, Minnesota, is presented. —*Tuberculosis Control among College Students, C. E. Lyght, Journal-Lancet, January, 1942, 62: 7.*—(*G. C. L.*)

Tuberculosis Control in Wisconsin.—The author reports the results of a tuberculosis case finding program carried out over a period of four years in Wisconsin Sanitary District no. 5, with a rural population of 185,000 in a total of 240,000. During the four year study, the various county boards in the district appropriated $23,916 for the program. The county health committee, through the district health officer and county nurse, handled the publicity and obtained the signed request cards. Radio talks were given, newspaper articles written, posters displayed and various groups addressed. It was significant that the longer the publicity was maintained, the higher was the number of request cards returned giving permission to test with tuberculin. Although the programs were centered about the school population, adults and preschool children also participated. From a total of 36,022 tuberculin tests 3,991 persons reacted. There were 4,074 roentgenograms taken and 232 cases of active or suspectedly active tuberculosis discovered; 1,222 roentgenograms showed definite evidence of primary tuberculous infection; 465 roentgenograms revealed nontuberculous lesions, of which the patients were not cognizant at the time. Although the adult and preschool groups represented only 7 per cent of those receiving tuberculin tests, they revealed the highest percentage of reactors. This is explained by the fact that nurses and physicians exerted special effort to test contact groups. Comparing the incidence of cases of active tuberculosis in the district for each of the age groups tested, with the normal expectancy for the state as based on the Farmingham ratio of nine active cases for each annual death, the preschool group was four times the normal expectancy; grade school children, high school students, normal school students and the adult group respectively 0.8, 1.0, 2.3 and 24.5 times the normal expectancy; for the sanitary district as a whole the rate was 2.2 times the normal expectancy. Since the inception of the program, the various counties

in the district have had rotating programs; selected age groups and contacts have been retested and most of the reactors are given a roentgen examination annually.—*Control of Tuberculosis in Wisconsin: The Results of Four Years of Mass Study in Sanitary District No. 5, 1936 to 1939, L. M. Morse, J. A. M. A., May 10, 1941, 116: 2142.*—(*G. L. L.*)

X-ray Findings in Children.—Radiological study of 25,000 persons, of whom 24,311 were children from six to twelve years, was carried out between 1937 and 1941. The first 10,632 were made using regular films, and the remainder using the method of Abreu. Of 3,006 registered, 2,784 were classified as tuberculous. Of the tuberculous, 290, or 1.21 per cent showed active lesions. Of these active cases, 27 were classed as primary infections and the remainder as reactivated infections of endogenous or exogenous origin. Among the latter type were 25 cases of epituberculosis, 198 cases of hilar or perihilar infiltration, 6 cases of exudative pleurisy, and of haematogenous dissemination. Of 2,494 classed as inactive, 507 showed increase of connective tissue; 930, enlargement of the hila; and 15, "shadows of doubtful nature". The remaining 1,042 showed either calcified foci in the lungs or nodes, fibrous scars, adhesive pleurisy, or fibrous scars in the lung fields. These systematic examinations were carried out on underprivileged children sent to seashore camps, first, to protect these usually undernourished individuals from contact with infectious cases, and second, to detect early and subclinical cases. The data obtained is also valuable from the epidemiological standpoint. The unit cost by the method of Abreu is but one-twentieth that of regular films. This study revealed an error of only 0.9 per cent in the former as compared with the latter. Several examples of radiophotographs are included.—*Resultados del catastro radiografico de 25,000 ninos de edad escolar, A. A. Raimondi, J. Gallo & L. M. Bonfante, Arch. argent. de tisiol., July–September, 1941, 17: 271.*—(*H. B. S.*)

Tuberculin Patch Test.—The tuberculin patch test was performed on a total of 612 white children aged six to nineteen years, all inmates of an orphanage in Ohio. Of this group, 469 had been subjects of quantitative intracutaneous tuberculin tests about six months before patch testing was done. The sensitivity levels were therefore known for 469 children but not for the remaining 143. The latter received at the time of the patch testing a single intracutaneous dose of 1:10,000 mg. of the same lot PPD with which the previous sensitivity levels had been determined. The patch tests were prepared under the direction of Dr. Florence Seibert. Old Tuberculin, comparable in potency to the International Standard OT when tested on guinea pigs, and two different concentrations of PPD (0.1 per cent and 1.0 per cent) New International Standard were used. The latter were mixed with 20 per cent glycerine to aid skin absorption. The patch tests were left in place for forty-eight hours and readings were made forty-eight hours after removal. For purposes of comparison two different areas of the body were chosen. The girls in the study group were tested on the right shoulder, the boys were patch tested on the left lower arm on the flexor surface. The former site was found to be preferable. Only one girl removed or lost a patch test, but about 20 boys had to have replacements. No harmful reactions resulted in either area and no significant differences could be detected between reactions in the two areas. The 1.0 per cent PPD patch test was the most potent. Among 612 children tested, of whom 123 or 20.1 per cent were positive to 1:10,000 mg. or less of PPD intracutaneously, the patch test was also positive in 116 or 94.3 per cent. In addition the patch test was positive in 36 out of 489 of those who failed to react to the 1:10,000 mg. dose of PPD. Although the total error of the particular patch test used may appear sizable: 6 per cent "missed" and 7.4 per cent "extra" reactors, it is emphasized that its importance depends upon the size of errors inherent in the method of testing. It is, for instance, shown that there is a sizable error in the intracutaneous method itself.—The 1.0 per cent PPD patch test was the best for detecting reactors to 1:10,000 mg. PPD but, as might be expected, it also uncovered the

largest proportion of reactors to the larger doses. It is possible that it may induce too severe reactions in persons with active tuberculosis. However, in limited experience with adults no severe reactions were encountered. The OT and 0.1 per cent PPD patches were weaker and of about equal strength. For case-finding surveys the 1.0 per cent PPD patch test may prove more efficient than the intracutaneous test, if the well known loss through "refusal of the needle" is taken into account.—*Quantitative Studies of the Tuberculin Reaction. II. The Efficiency of a Quantitative Patch Test in Detecting Reactors to Low Doses of Tuberculin, M. L. Furcolow & E. L. Robinson, Pub. Health Rep., December 19, 1941, 56: 2405.*—(*A. B. T.*)

Tuberculin Testing.—Tuberculin testing with the standard first and second doses of the Purified Protein Derivative was done on 1009 cases chosen at random from the wards and dispensary clinics of the Quezon Institute. Of 294 cases with tuberculosis 239 (81.3 per cent) reacted to the tuberculin. Seventy-four cases (25.2 per cent) reacted to the first dose of 0.000,02 mg., while 165 (56.1 per cent) reacted to the second dose of 0.005 mg. The percentage of reactors decreased with the increase of the extent of the pulmonary lesion. Anergy to tuberculin was associated largely with progressing tuberculosis. Out of 121 apparently normal subjects without contact 99 (81.8 per cent) were positive. Out of 237 apparently normal cases with a history of contact 215 (90.7 per cent) were positive. Out of 252 individuals with fluoroscopic evidence of hilar enlargement 221 (87.7 per cent) were tuberculin positive. Out of 105 individuals with hilar calcifications, fibrotic strands or diaphragmatic adhesions, 93 (88.6 per cent) were positive.—*Tuberculin Testing (P. P. D.) in a Group of Dispensary and Ward Cases, L. J. Salas, P. D. Nazareno & A. Bernardo, Bull. Quezon Inst., July, 1941, 2: 59.*—(*G. C. L.*)

Tuberculosis in Military Service.—The Report of the Surgeon General of the Army for 1940, covering the experience of 1939, records a general hospital admission rate for the entire army of 1.8 cases per 1,000 men for tuberculosis and a rate of 1.0 for officers. Most of this is believed to represent disease that escaped detection at the time of examination for admission. It has been estimated that up to October 1940 tuberculosis in veterans of the World War had cost approximately $960,000,000 in compensation, vocational training, insurance and hospitalization. It is now universally agreed that roentgenological examination is far more effective in detecting early tuberculosis than physical examination, and that such preinduction examination will avoid ultimate heavy federal costs. In Canada the rate of rejection for tuberculosis among recruits is reported as 1.06 per cent. In Australia the 35 mm. film has been used extensively. The rate of rejection for tuberculosis is reported as 0.5 per cent. Because of lack of X-ray facilities only 51 per cent of men called to induction centres in the first six months of Selective Service have had chest roentgen ray examinations. It is expected, however, that roentgen ray equipment will eventually be installed in all induction centres. As to the relative merits of different types of roentgen ray examination, it is conceded that standard sized films are definitely superior to 4 by 5 inch fluorograms, and these in turn surpass 35 mm. fluorograms in the detection of small lesions. There is still a great variation in the amount of exclusion for tuberculosis at the different induction centres, and efforts will be made to correct for variations due to interpretation standards by selecting physicians highly competent in the radiological diagnosis of tuberculosis. The other remedy for the present lack of uniformity in rejection for tuberculosis is improvement in the phrasing of standards for acceptance and rejection. It is believed that neither small strandlike fibroid lesions nor small isolated calcified residues characteristic of primary infection should be a cause for rejection. Returns from areas in New York State where complete roentgen ray coverage is available at induction centres indicate that the percentages of rejection for active tuberculosis vary from 0.9 to 1.3 per cent. The average cost of the examination in

the period covered by the report was 54 cents per man. The average per capita cost for cases of tuberculosis discovered was $63. In the men rejected for significant tuberculosis the disease discovered was minimal in 50 per cent, moderately advanced in 43 per cent and far advanced in 7 per cent. With the means available it appears easily possible to induct an army without any clinically significant tuberculosis. Periodic reexamination by roentgenology is essential to discover new cases resulting from outside exposure.—*The Problem of Tuberculosis in Military Service, E. R. Long, J. A. M. A., July 26, 1941, 117: 264.*—(*G. L. L.*)

Tuberculosis in Industry.—The death rate from tuberculosis has declined from 200 per 100,000 to 45 per 100,000 during the past 35 years. However the disease is still a chief cause of disability and early death. Tuberculosis mortality is 2.5 times as great in unskilled and semi-skilled workers than in the general population. However many factors play a part in producing this high rate and the full blame cannot be placed on industry. Previous infection is of course important and living conditions are another factor. It is found that many unskilled workers live under crowded and dirty conditions. A survey in Pittsburg revealed the chances for developing tuberculosis 3.5 times greater in the poor than in the well-to-do. Three important factors are thus evident in causing illness from this disease in industry: acceptance of sick or potentially sick workers; spread of the disease to other workers through contact; environmental influences which activate infection already present. It is well known that silicosis and tuberculosis often coexist and medico-legal opinion is often at a loss to determine which is the true cause of disability. Trauma has also been a factor in reactivating old tuberculosis and thus another compensation problem is raised, but X-raying all prospective employees before acceptance is a useful practice. Certain gases appearing in various industries are also credited with irritative action sufficient to reactivate old lesions. Thus successful tuberculosis measures will provide proper living conditions, medical care, good diet and proper health education. Employers must also become more liberal in providing selected and limited work for those able to carry light work, and compensation laws should protect both employer and employee.—*Tuberculosis and Its Allied Conditions, C. H. Marcy, Indust. Med., October, 1941, 10: 441.*—(*W. G. C. M.*)

Tuberculosis among Selective Service Men.—The mortality rate from tuberculosis in upstate New York has fallen from 137 per 100,000 in 1917 to 44 per 100,000 in 1939. Tuberculosis is still second in importance as a cause of death among men 20 to 34 years of age. The highest tuberculosis morbidity is between 15 and 29 years of age. To prevent tuberculous men from entering the army, fluorophotographic films, that is, miniature films of the fluoroscopic picture, should be taken. This would prove to be less expensive than the treatment and compensation of tuberculous soldiers and their contacts in the army. By comparing 14 x 17 inch, 4 x 5 inch and 35 mm. films it was found that the 4 x 5 inch films gave sufficiently good results to warrant their general use. Among 14,923 men examined between November 25, 1940 and March 14, 1941, tuberculosis was found by roentgenological examination in 127 (0.9 per cent).—*Tuberculosis among Selective Service Men in New York State, R. E. Plunkett, War Med., September, 1941, 1: 612.*—(*G. C. L.*)

Immunopathology of Tuberculosis.—It has long been known that the life expectancy of guinea pigs infected subcutaneously or intravenously with highly virulent human or bovine tubercle bacilli is prolonged considerably by specific immunization. It is essential that the infecting dose be not too large. When large intravenous infecting doses are used, general specific allergic intoxication becomes a significant factor causing an early lethal outcome for some of the immune animals and decidedly lowering the average life span for the survivors. By appropriate treatment with suitable filtrates (or natural tuberculins) from cultures of tubercle bacilli, these unde-

sirable allergic lethal intoxications can be prevented. Such treated animals then display only the specific immune protection with resultant retardation of the tuberculosis and prolongation of life. An experiment is reported illustrating this phenomenon. Three groups of 8 guinea pigs were used. One group, the *specific immune*, received a subcutaneous injection of 1 mg. of avirulent human tubercle bacilli thirty-two days prior to the intravenous injection of a large dose (1 mg.) of virulent bacilli. Another group, *immune and treated*, received, in addition, five injections of natural filtrate between the immunizing and infecting doses. These injections consisted of 1 cc. each of a 1:10 dilution of a Seitz filtrate prepared by growing tubercle bacilli on a non-protein nutrient medium (Wong-Weinzirl). The third group served as a *control*, receiving only 1 mg. of virulent bacilli administered intravenously. The duration of life after infection for the controls ranged from 11 to 18 (average 16) days; the specific immune guinea pigs, on the other hand, averaged only 13 days (1 died on the first day, 1 on the second and 1 lived for 28 days); the *specific immune and treated* animals lived from 17 to 27 days (average of 23). The natural filtrate treatment apparently prevented the lethal allergic intoxication in the second group. Although the specific toxicity in tuberculosis cannot be described definitely and perhaps assumed to be due to a tuberculoprotein similar to that liberated *in vitro* (tuberculin), desensitization of bacillary tuberculo-allergically sensitized (in contradistinction to anaphylaxis?) animals can be accomplished by appropriate treatment with natural filtrate (tuberculin) when used in relatively small, primarily nontoxic, amounts. Throughout the article there runs a critical evaluation, from the author's standpoint, of one or more of the factors involved in tuberculoimmunity.—*Certain Specific and Immunopathologic Features of Tuberculosis, H. J. Corper, Am. J. Path., September, 1941, 17: 681.*—(*J. S. W.*)

Spread of Tubercle Bacilli.—It is generally accepted that tubercle bacilli are carried from the lungs in advanced pulmonary tuberculosis to different parts of the body by sputum, blood and lymph. A series of 126 cases of fatal pulmonary tuberculosis was selected to determine the probability of spread by the several routes mentioned. A common site of tuberculosis secondary to pulmonary disease, but one that is seldom recognized in life, is the tonsil. In the present article the presence of tuberculosis in certain other parts is correlated with its occurrence in the tonsil in an attempt to determine the relative part played by sputum, blood and lymph in the spread of the disease. The tonsils and intestine were chosen as measures of infection by sputum, and the upper cervical, paratracheal, axillary, mesenteric and inguinal lymph nodes as measures of lymphatc spread, with recognition of the fact that all the organs named may be infected haematogenously. Haematogenous spread was studied in the spleen, liver, kidneys, adrenals, myocardium and pancreas. A high positive correlation existed in tuberculosis of the tonsils, upper cervical lymph nodes, intestine and mesenteric lymph nodes, presumably indicating sputum infection of the organs of the alimentary tract and secondary involvement of the draining lymph nodes by the lymph stream. For example, there was a significant higher portion of tonsil-positive cases among the intestine-positive than in the intestine-negative cases; yet numerous cases of tuberculosis of the tonsils were found in the absence of intestinal involvement. And *vice versa* the percentage of cases with intestinal tuberculosis was higher in the tonsil-positive than in the tonsil-negative group etc. Of the several series of lymph nodes examined, the superficial inguinal lymph nodes were infected the least frequently. Their incidence of tuberculosis was considered a rough measure of the extent of haematogenous spread to the lymph nodes, which could be subtracted from the total incidence of infection of the other lymph nodes to furnish a rough minimal index of the involvement of the latter by way of the lymph stream. The tonsils and intestines were tuberculous in about three-fourths of the cases, and the upper cervical and mesenteric lymph nodes in almost

three-fourths. Tubercles were found in the axillary nodes in one-third and in the inguinal nodes in more than one-sixth of the cases of the series. A striking difference in the incidence of haematogenous infection was apparent on examination of the viscera. Single section examination (on account of the amount of material only single-section was done throughout) showed tubercles in approximately two-thirds of the cases in the liver and spleen, in one-fourth in the kidney, and 16 per cent in the adrenal and 2 per cent each in the myocardium and pancreas. Although tuberculosis is commonly believed to exhibit a greater tendency to haematogenous and lymphatic spread in Negroes than in whites, no significant difference between the races was found in these respects in the cases here reported, nor was any difference found between the sexes. The incidence of generalized amyloidosis was 8 per cent and of advanced fatty infiltration of the liver, 26 per cent. No racial difference was apparent.—*The Spread of Tubercle Bacilli by Sputum, Blood and Lymph in Pulmonary Tuberculosis, E. R. Long & R. Faust, Am. J. Path., September, 1941, 17: 697.*—(*J. S. W.*)

Calcified Pulmonary Lesions.—The purpose of this study was to determine the relationship between the presence of pulmonary calcifications and exposure to tuberculosis, ascariasis and possibly other specific diseases. Ross County, Ohio, was chosen as a desirable study area because pulmonary calcifications were of common occurrence, tuberculosis mortality was not unusually high, the geology was known and the population was rural, which allowed more reliable evaluation of household exposure. Forty-four households, living on farms, were studied. The technique adopted was the same as described by Frost for household studies. Of 253 household associates, 49.4 per cent showed calcified lesions. Of these individuals, 63 were under the age of ten years, and 97 between the ages of ten and nineteen years. No significant relationship could be demonstrated between contact with known tuberculosis and the occurrence of pulmonary calcifications in the group studied. Intracutaneous tuberculin test with PPD in household associates resulted in the finding of a low incidence of positive tuberculin reactions in the entire study group. Only 17.4 per cent under the age of twenty were tuberculin positive. The X-ray findings of present household members showed almost no evidence of tuberculous infection other than the calcified lesions under discussion. In addition to these investigations, stool samples of 235 individuals and soil samples near homes were examined for the presence of parasites. The incidence was so similar for the groups with and without calcified lesions that no significant conclusions could be drawn. It was, however, noted that there was a marked difference in age distribution. The number of persons under fourteen years of age was much smaller in the group with calcified lesions than in the group without calcifications. The data furnished in this study were not considered sufficient to prove or disprove the possible rôle of ascaris as a causative agent in pulmonary calcification. Certain of the families have been studied in the National Institute of Health for any evidence of the presence of *Coccidioides*. The results were uniformly negative.—*An Epidemiological Study of Calcified Pulmonary Lesions in an Ohio County, B. J. Olson, W. H. Wright & M. O. Nolan, Pub. Health Rep., October 31, 1941, 56: 2105.*—(*A. B. T.*)

Prothrombin in Tuberculosis.—Various laboratory tests have been used in the study of tuberculous patients to determine the degree of resistance and toxaemia and to estimate the response to treatment, but as yet, no single laboratory procedure has proven satisfactory. Assuming that changes might occur in the blood stream affecting the circulating plasma without directly influencing the production in the liver, an attempt was made in this study to determine what changes, if any, occur in the plasma prothrombin in pulmonary tuberculosis. Certain trends became apparent. It was noted that patients with effective collapse therapy have a normal or increased prothrombin level and that in those with partially successful collapse the values approach normal

except in the presence of complications. Patients having low grade activity or chronic fibrotic disease have prothrombin values approaching normal. However, in the presence of very active disease the prothrombin values are low and chronic ulcerative cases have moderately reduced values. As clinical improvement occurs there is a gradual increase in the circulating prothrombin. It was found that the erythrocyte sedimentation rate does not always parallel the prothrombin level and the latter seems to give more information regarding the clinical status. The vital capacity bears no definite relation to the prothrombin level, but when the disease is completely inactive there is usually an increase in the prothrombin when reduction in vital capacity occurs. The administration of vitamin K has no effect upon the prothrombin level. Toxaemia appears to be an important factor in altering prothrombin values, for the decrease in prothrombin is almost directly proportional to the degree of toxaemia. A decrease in prothrombin beyond that anticipated from the extent of the disease or the degree of toxicity occurs in haemoptysis. The possibility of prothrombin destruction in the lungs, as suggested by the studies of Andries *et al.*, the possible effect of the circulatory changes occurring after the institution of collapse therapy on this and the possible destructive effects of toxic products on prothrombin are discussed. The inclusion of prothrombin determination in the study of patients with tuberculosis is advocated.—*Prothrombin Studies in Tuberculosis, J. W. Savacool, Am. J. M. Sc., June, 1941, **201:** 830.*—(*G. F. M.*)

Congenital Cysts and Tuberculosis of Lung.—The authors describe 3 cases of congenital cysts of the lung and active pulmonary tuberculosis in adults. Two patients had the cyst in the right upper lobe, the third one had it in the left upper lobe. All of them have had positive sputum and in 2 it was possible to make a pathological study of the lungs. One cyst was partially lined by cylindrical epithelium and the other was without epithelium. The tuberculous lesions were of fibrocaseous type with cavitation. The cysts did not produce symptoms and were discovered either by radiology or by autopsy.—*Disgenesia pulmonar a forma quística y tuberculosis asociada, O. P. Aguilar & J. Queirel, Rev. de la asoc. méd. argent., June 15, 1941, **55:** 450.*—(*J. A. T.*)

Geriatric Aspect of Tuberculosis.—Those who have studied pulmonary tuberculosis in the older age groups are impressed by the lack of emphasis on this phase of the disease, for there has not been a general appreciation of the frequency of the infection in older persons. In 3000 routine postmortem examinations performed at the Philadelphia General Hospital 25 per cent of the patients were found to have pulmonary tuberculosis. One third of this necropsy group were persons sixty years or over and in this fraction was 28 per cent of the total incidence of pulmonary tuberculosis. In this older age group occurred 11 per cent of those with fibroulcerative disease, 8 per cent of those with miliary disease and 65 per cent of those with healed fibroid type tuberculosis. If these figures could be applied to the older age group of the general population it would appear that, among persons sixty years of age or older, 5 per cent have fibro-ulcerative, 0.5 per cent have miliary and 15 per cent have healed fibroid tuberculosis. The active form of the disease occurred equally in elderly whites and Negroes. The miliary form was a little more common in the Negro and the fibroid form was more common in the elderly white person. The symptom complex is like that seen in younger persons but may be obscured by changes associated with increasing age. Cough and expectoration were the most common symptoms, but haemorrhage, fever and night sweats were not infrequent. As a rule the early symptoms of onset were mild. The protocols of 136 persons in the tuberculosis division over sixty years of age were also studied. Of these 26 per cent reported known tuberculosis in older members of the family. X-ray confirmed the clinical impression in every case in which it was used and cavitation was found in 60 per cent, while 69 per cent had positive sputum by routine stained smear method. Sputum was positive in all the dia-

betics who made up 11 per cent of the group and cavitation was present in 80 per cent. Active therapy was employed in only 6. It is important that the older unrestrained and infectious members of society be found and controlled to prevent their continual contribution to the process of spreading tuberculosis. What is needed is a recognition of the occurrence of tuberculosis in the older age group and earlier diagnosis coupled with a more stringent isolation and more active treatment. —*The Geriatric Aspect of Pulmonary Tuberculosis, J. T. Freeman & C. A. Heiken, Am. J. M. Sc., July, 1941, 202: 29.*—(*G. F. M.*)

Tuberculosis and Protamine Zinc Insulin.—The authors have carried out a study on 349 patients with diabetes complicated by tuberculosis treated at Sea View Hospital over a period of five years. Since in 71 cases diet was sufficient to control the tuberculosis, the comparative effect of protamine-zinc-insulin and of regular insulin on the clinical course of the tuberculosis was checked in 278 cases. Since protamine-zinc-insulin exerts a more effective control of diabetes mellitus than regular insulin, it was thought possible that the tuberculosis might be more favorably influenced by the protamine-zinc-insulin. Regular insulin was used exclusively in 131 and protamine-zinc-insulin alone or combined with regular insulin in 147 cases. Of the 147 patients receiving protamine-zinc-insulin the tuberculosis became arrested or apparently arrested in 22.4 per cent, showed improvement in 6.1 per cent, remained stationary in 22.5 per cent, progressed in 30.6 per cent and resulted in death in 18.4 cer cent, while in the 131 treated with regular insulin the tuberculosis was arrested or apparently arrested in 13 per cent, remained stationary in 9.1 per cent and progressed in 33.6 per cent, and 44.3 per cent of the patients died. A comparative study was made also on 147 of the 278 cases, who had been under insulin treatment for more than six months and the results were found to be even more favorable in those cases treated with protamine-zinc-insulin as compared with regular insulin than for the entire group of 278.—*Advantages of Protamine Zinc Insulin: Results in Diabetes Complicated by Tuberculosis, H. O. Mosenthal & M. F. Mark, J. A. M. A., June 14, 1941, 116: 2652.*—(*G. L. L.*)

Primary Tuberculosis in Adults.—The opportunity to study primary infection in young adults presents itself in the armed forces in Switzerland. Primary tuberculosis in adults is not, as is frequently assumed, a benign disease. The author presents the case histories of three young soldiers who were apparently healthy when they entered military training. They took the training course and several months of active duty without difficulties. Thereafter they took ill with atypical symptoms. In 2 cases these were subsequently shown to be due to tuberculous meningitis, and the patients succumbed within a short time. The third patient took ill with pulmonary tuberculosis, and this pursued a rapid unfavorable course in spite of attempts at therapy. At autopsy they presented typical primary complexes in the lungs and in the bronchopulmonary nodes which were freshly caseated. There was also evidence of fresh generalized disseminations. It is interesting that 2 of the patients were friends and spent a good deal of time together prior to the onset of the illness. While a definite source of infection cannot be found in any of the cases, the assumption appears justified that the soldiers contracted primary progressive tuberculosis during the course of military service.—*Zur Frage der Primärtuberkulose des Erwachsenen, P. Bernoulli, Schweiz. med. Wchnschr., September 20, 1941, 71: 1087.* —(*H. M.*)

Tracheobronchial Tuberculosis.—The author presents the results of a series of bronchoscopic examinations of 580 tuberculosis patients at the Sea View Hospital, of whom 160 had bronchoscopic evidence of tuberculosis. All but 12 had one of the three stages of endobronchial tuberculosis. The first stage consists of a submucous infiltration which causes a slight elevation of the mucosa. This accounted for 9 of the 160 lesions observed. The submucous infiltration consists of an invasion

of the submucous tissues by the elements of tuberculous inflammation. If this granulation tissue breaks through the intact mucosa an ulceration results. It does not remain so for long because the tuberculous elements extend above the surface to form a granuloma. This process constitutes the second stage, the ulcerogranuloma. This type of lesion was seen in 101 cases of the series. The ulcerogranuloma represents the most active phase of the disease, filling the adjacent branch bronchus and causing an atelectasis of the disease-bearing area. It extends along the bronchial wall from the branch bronchus. This process may resolve at any time, leaving behind superficial fibrous tissue changes. In most instances, however, the granuloma eventually fills the main bronchus, so that atelectasis of the entire lung results. Frequently the superficial layers of the ulcerogranuloma undergo caseous degeneration. The caseous material is heavily laden with tubercle bacilli. The ulcerogranuloma is pale pink, corrugated and avascular. When healing or resolution takes place the irregular surface becomes flattened and assumes a velvety appearance. This appearance indicates the presence of the final stage—fibrosis. Fibrotic lesions were encountered 37 times. Fibrosis is usually associated with some degree of stenosis. The upper end of a lesion represents the limit of its extension from the primary focus in the lung. When the main bronchus is occluded the bronchoscopist must draw his conclusions as to the lesion's origin from previous observations or from the roentgen findings and physical signs. If the ulcerogranuloma is partly obstructive he may be able to trace it all the way to the bronchus of the upper lobe or branch of the lower lobe from which it originated. Ulcerogranulomatous and fibrotic lesions are traceable to processes in the upper lobes more frequently than in the lower; the ratio is approximately 3 to 2. An exception to the ulcerogranuloma which extends along a bronchial surface is the granulomatous process resulting from protrusion of a disintegrating mediastinal node into the trachea or bronchus. This occurred three times in this series. Pressure on the trachea or bronchus from diseased mediastinal nodes accounts for about 1 per cent of all tuberculous bronchial lesions in adults. The most frequent evidence of mediastinal glandular disease is an inward bulge of one of the bronchial walls which narrows the lumen. A much less frequent result of pressure on the bronchial wall is its collapse because of absorption of the cartilaginous rings. Two such cases of collapse occurred in this study. The signs and symptoms of tuberculosis of the trachea and bronchi are caused by varying degrees of obstruction. Partial stenosis of the trachea or main bronchus gives rise to a type of asthmatic breathing. Atelectasis may be confined to a relatively small segment of lung or to the entire lung of the involved side and may be the first sign of pulmonary tuberculosis. The only explanation for the presence of tubercle bacilli in the expectoration of many patients otherwise successfully treated is the presence of an active tuberculous lesion in the tracheobronchial tree. Bronchoscopy in general is indicated for the following reasons: (*1*) As a routine procedure before thoracoplasty. (*2*) The presence of tubercle bacilli in the sputum associated with a pulmonary lesion which should have been controlled by the previously induced pneumothorax or thoracoplasty. (*3*) A spread of the disease to a healthy lung which was not expected on a basis of the existing pulmonary condition. (*4*) A wheezing, coarse, noisy type of breathing. (*5*) Unexplained atelectasis. (*6*) The presence of tubercle bacilli in the sputum despite apparently negative roentgenographic findings.—*Tuberculosis of the Trachea and Bronchus, M. C. Myerson, J. A. M. A., April 12, 1941, 116: 1611.*—(*G. L. L.*)

Results of Pneumothorax.—It is difficult to evaluate properly the many factors which influence the final result in pulmonary collapse therapy. The more important factors are: (*1*) *Dominant tissue reaction.* This factor has been afforded first consideration in most reports. From these it is evident that the cases in the exudative (caseous-pneumonic) phase show the highest frequency of good results. (*2*) *Extent of lesion.* The importance of this

factor is self evident. (*3*) *Type of collapse obtained.* The extent of the collapse and the presence or absence of adhesions are of less importance than the closure of a cavity or a persistently negative sputum. The extent and character of the lesion primarily determines the duration of the collapse therapy. Social and economic factors must also be considered in this regard. (*4*) *Status of opposite lung.* This is not such an important consideration as it used to be now that bilateral artificial pneumothorax is practicable. While the status of the opposite lung may be a minor consideration in deciding upon the advisability of collapse therapy, it is a factor that plays a tremendous part in determining end results. (*5*) *Clinical picture.* In cases with a natural tendency to heal, a favorable outcome cannot be attributed wholly to the pneumothorax. Unless there is a period of observation prior to collapse therapy, this factor can seldom be properly evaluated in an analysis of end results. (*6*) *Type of patient.* The coöperation of the patient contributes more to the success of collapse therapy than any other factor. This depends on his intelligence, emotional stability, confidence in his physician and obedience. Social and economic factors greatly influence the outcome. The results of collapse therapy reported in 15 outstanding articles since 1924 are reported and averaged. These figures show that about two-thirds of those with an efficient collapse are "living" (after a variable period of years) whereas less than one-third with inefficient collapse progress favorably. Individuals with unilateral disease and an effective collapse constitute less than one-quarter of the reported cases. Since 1930, 172 patients have been treated in the Pneumothorax Clinic of the Johns Hopkins Hospital. This was a more favorable group of cases than is usually experienced in sanatoria or hospitals, but the advantage is somewhat offset by the fact that all of the dispensary patients are ambulatory. Thirty-seven per cent of these patients are still receiving refills and 40 per cent are reëxpanded and well. Of the remainder, 12 per cent are lost and 11 per cent dead. Some of these cases are reported in detail, with reproductions of their serial X-ray films, as examples of representative end-results and to show complications. The efficacy of collapse therapy of relatively short duration is also illustrated. The best evidence of the success of artificial pneumothorax is its widespread use, for about 50 per cent of the tuberculous population (patients?) are now receiving this form of therapy.—*Results of Artificial Pneumothorax Therapy in Pulmonary Tuberculosis, H. G. Whitehead, Bull. Johns Hopkins Hosp., October, 1941, 69: 363.*—(*J. S. W.*)

Pneumothorax Therapy.—The difficulties in evaluating the results of pneumothorax treatment are due to the fact that no comparable control material is available. Two-hundred patients of pneumothorax who were observed for at least five years are compared to cases under conservative treatment for about the same period. Ninety-six early, unilateral cases were treated with pneumothorax, 50 cases were treated conservatively. The two groups behave alike regarding sex, age, duration of symptoms, temperature, extension and density of the process, size and number of cavities, location of cavities, amount of expectoration, sedimentation rate, the hospital in which the treatment was given and the observation period. In the pneumothorax material 21 men (64 per cent) and 43 women (68 per cent) are well; nine men (27 per cent) and 15 women (24 per cent) died within 5 years. Of the conservatively treated patients, 5 men (28 per cent) and 15 women (47 per cent) were well; 7 men (39 per cent) and 15 women (47 per cent) died. In cases with larger cavities or with more than one cavity pneumothorax treatment gives much better results than conservative treatment. The prognosis is best in pneumothorax without adhesions; even in pneumothorax cases with extensive unseverable adhesions the results are better than those obtained by conservative treatment. In early bilateral cases and in chronic unilateral and bilateral cases no definite conclusions can be drawn from the material presented with regard to advantage of pneumothorax therapy over conservative treatment. A survey of the total pneumo-

thorax material shows that there is a distinct correlation between the occurrence of adhesions and the extension and character of the tuberculous process.—*Comparative Studies on the Late Results Obtained in Cavernous Phthisis by Conservative Treatment and by Pneumothorax Therapy, S. Cold, Acta tuberc. Scandinav., 1941, Fasc. 3–4, 15: 282.*—(*G. C. L.*)

Bilateral Collapse Therapy.—One hundred and twenty five cases of bilateral advanced tuberculosis, all with positive sputum and 102 (81.6 per cent) showing the presence of pulmonary cavity, received bilateral collapse therapy. Among them, 100 were treated by bilateral simultaneous artificial pneumothorax and 25 by thoracoplasty and contralateral pneumothorax. Eighty-one were males and 44 were females. Sixty-seven and two tenths per cent of the patients were from twenty-one to thirty years old, none was over forty. Generalized far advanced bilateral ulcerative lesions or advanced disseminated lesions particularly with emphysematous changes in both lungs are definite contraindications. The most common complications were pleurisy with effusion (48.8 per cent), spontaneous pneumothorax (6.4 per cent) and tuberculous empyema (2.4 per cent). In 72 per cent of the cases treated with bilateral artificial pneumothorax and in 80 per cent treated with thoracoplasty and contralateral pneumothorax the sputum became negative for tubercle bacilli. Of the 100 cases treated with simultaneous bilateral pneumothorax, 12 per cent were apparently cured, 30 per cent arrested, 13 per cent apparently arrested, 17 per cent quiescent, 12 per cent improved, 5 per cent unimproved, 8 per cent dead, and 3 per cent untraced. Of the 25 cases treated with thoracoplasty and contralateral pneumothorax, 12 per cent were apparently cured, 32 per cent arrested, 36 per cent apparently arrested, 4 per cent quiescent, 12 per cent improved and 4 per cent dead. Sixty-one per cent of the bilateral pneumothorax patients and 84 per cent of the thoracoplasty and contralateral pneumothorax patients were able to carry on their daily work without symptoms.—*The Management of Bilateral Advanced Pulmonary Tuberculosis. With Report of Clinical Results of 100 Cases of Simultaneous Bilateral Artificial Pneumothorax and 25 Cases of Contralateral Pneumothorax Combined with Thoracoplasty, M. H. Chien, Chinese M. J., August, 1941, 60: 156.*—(*G. C. L.*)

Pregnancy and Collapse Therapy.—One hundred and twenty-eight tuberculous pregnant women with collapse therapy were observed. One hundred and sixteen patients had one-sided artificial pneumothorax, 11 had bilateral pneumothorax and one had a thoracoplasty. Thirty-seven cases had no collapse-therapy. Of the cases with collapse-therapy 82 (64 per cent) were clinically arrested, 22 (17 per cent) clinically quiescent and 16 (13 per cent) were frankly active. Eight patients (6 per cent) died. Of the cases without collapse therapy, 2 (5 per cent) were clinically arrested, 12 (32 per cent) were quiescent, 13 (35 per cent) were frankly active. Ten patients (28 per cent) died. In the collapse group there were 150 deliveries with 10 deaths, none of which was due to tuberculosis. In the control group there were 45 deliveries with 35 deaths, 4 of which were due to tuberculous meningitis. Early institution of collapse therapy is advisable. There was no cardio-respiratory embarrassment in the cases under collapse-therapy. Vital capacity studies were done; the vital capacity showed no significant decrease as the pregnancy progressed, nor did it show any significant increase after delivery. In spite of the good results of collapse therapy in pregnancy birth control is suggested.—*Pregnancy and Collapse Therapy in Pulmonary Tuberculosis—Some Observations in 165 Cases, J. G. Pempengco & N. M. Santiago. Bull. Quezon Inst., July, 1941, 2: 3.*—(*G. C. L.*)

Pleural Effusion in Pneumothorax.—Of 1148 pneumothorax cases at the Quezon Institute 573 (49.9 per cent) developed fluid during some time of their pneumothorax treatment. Fluid complicated 125 (40.6 per cent) of 308 cases with minimal lesions, 371 (51.8 per cent) of 716 cases with moderately advanced lesions and 77 (62.0 per cent) of 124

cases with far advanced lesions. There was a relatively higher incidence of fluid formation in the cases without cavities than in those with cavities. Of 573 cases with hydrothorax 317 (55.3 per cent) developed a considerable amount of fluid which required one or more tappings. Of these aspirated cases, 216 (37.7 per cent) had clear fluid throughout the course of the complication, 84 (14.6 per cent) with originally clear fluid became purulent, 17 (3 per cent) were purulent from the start. The incidence of fluid formation is in direct proportion to the extent of the parenchymal lesions. There is greater tendency towards empyema formation in cases with more extensive than with less extensive pulmonary lesions. Of the 573 cases with effusion, 423 (73.8 per cent) presented clinical symptoms indicative of fluid formation. Thirty-seven and two-tenths per cent of the effusions occurred during the first three months of treatment, 26.5 per cent during the second, 18.4 per cent during the third, and 6.3 per cent during the fourth three months of treatment. Of 150 cases of pneumonolysis 33 (22 per cent) developed hydrothorax after the operation.—*Pleural Effusion in Artificial Pneumothorax Therapy at the Quezon Institute, T. S. Santos, Bull. Quezon Inst., July, 1941, 2: 47.*—(*G. C. L.*)

Pleurisy.—Statistical data on 4967 hospitalized cases of pleurisy, seen between 1900 and 1939, are presented. This study includes all forms of pleurisy, such as dry, exudative, haemorrhagic, chronic adhesive, with the exception of empyemata. There were 2,953 cases of pure pleurisy, 116 cases of rheumatic pleurisy, 632 cases of tuberculous pleurisy and 1266 cases of other types of pleurisy. The age distribution of the cases with pure pleurisy was: 5 to 10 years, 10.9 per cent; 10 to 14 years, 12.9 per cent; 15 to 19 years, 19.2 per cent; 20 to 24 years, 19.8 per cent; 25 to 29 years, 11.1 per cent; 30 to 34 years, 5.6 per cent. If the incidence of pleurisy for 100,000 inhabitants is calculated, the maximum is found to be between 15 and 20 years of age. During forty years of observation the age distribution remained about the same. There is a considerable parallelism between the curves for pure pleurisies, tuberculous pleurisies and rheumatic pleurisies.—*La répartition suivant l'age de 5000 pleurétiques hôpitalisés à Gothembourg, A. F. Vilén, Acta tuberc. Scandinav., 1941, Fasc. 3–4, 15: 257.*—(*G. C. L.*)

Apical Thoracoplasty with Pneumothorax.—The ineffective pneumothorax in which the apex is densely adherent to the mediastinum and the dome of the pleura presents a particularly difficult problem. These pneumothoraces are apt to accumulate fluid which persists for long periods of time. With the use of high pressures the lower and healthy part of the lung is collapsed against the mediastinum, and in the later course of events this frequently resists reëxpansion. Because the cavity bearing apex of the lung is adherent, the sputum often remains positive. The author has coined the term "arcuate pneumothorax" for these cases, because the upper lobe is widely adherent above, the lower lobe is rather well collapsed against the mediastinum, and the appearance is that of an arc. In these cases intrapleural pneumonolysis is usually impossible. The author advises apical paravertebral thoracoplasty with removal of segments of the first five or six ribs with or without apicolysis. He has seen splendid results in two cases so treated. Following thoracoplasty he has observed reëxpansion of the healthy lower portion of the lung which had resisted reëxpansion previously in spite of good negative pressures. He believes that this may be due to a pleuro-pulmonic reflex. Following thoracoplasty the selective pneumothorax is maintained in the usual fashion. Fluid did not reaccumulate after the operation, and two patients have been discharged in good condition with negative sputum.—*Une indication particulière de la thoracoplastie apicale, G. Rossel, Schweiz. med. Wchnschr., October 4, 1941, 71: 1158.*—(*H. M.*)

Thoracoplasty Results.—In spite of the large percentage of advanced cases, a series of 100 thoracoplasties done since 1933 show a large proportion of successful results. In general the accepted operative techniques were employed, but high spinal anaesthesia

was generally used. As a result the total anaesthetic fatality for 211 spinal anaesthetics was only 3.8 per cent as compared with 8.2 per cent in a series of 65 where other anaesthetics were used. The author believes that irritation of the bronchi, disturbance of respiration and accumulation of secretion are minimized with high spinal anaesthesia, and following operation better respiration is maintained, thus minimizing postoperative complications. However the dangers are sufficient to require the skill of a trained anaesthetist. Of the 100 cases reported, 46 have been discharged with cavity closed and negative sputum, of whom 29 are working, 2 are still in hospital with converted sputum, and there were 26 deaths from all causes, 16 of which were chargeable to the operation. In the unilateral group of 16 cases there were no deaths and 10 have been discharged, while in a bilateral group with inactive contralateral side, 60 per cent of 40 cases have closed cavities and negative sputum. However there were 7 deaths in this group from all causes. In a third group of 44 cases of bilateral disease, the contralateral side being active 31.8 per cent had closed cavities and converted sputum and there were 18 deaths from all causes. There were two cases of bilateral cavitation on which bilateral thoracoplasty was performed, one of which has been discharged converted.—*Results of Thoracoplasty in Advanced Pulmonary Tuberculosis, D. Ackman, Canad. M. A. J., November, 1941, 45: 422.*—(*W. G. C. M.*)

Air Embolism.—Air embolism is the most dangerous immediate complication of artificial pneumothorax. Of 194,332 pneumothorax refills given at the Quezon Institute between January 1929 and April 1941, 9 cases of air embolism occurred. One patient died of air embolism. Symptoms and signs were: giddiness; loss of consciousness; tingling or numbness of face, arms or legs; vasomotor phenomena; dimness of vision; temporary blindness; dizziness; headache; tonic or clonic spasms; flaccid paralysis; hemiplegia or monoplegia; conjugate deviation of the eyes, with asymmetric dilatation of pupils; urinary retention; slow or rapid, weak, irregular pulse; feeble or suspended respiration; cessation of heart beat. In all cases embolization took place in the cerebral vessels, except in one case where the symptom of urinary retention pointed to a localization in the spinal cord.—*Air Embolism in Artificial Pneumothorax Therapy (With Report of a Fatal Case), M. Cañizares & G. C. Santiago, Bull. Quezon Inst., July, 1941, 2: 31.*—(*G. C. L.*)

Mediastinal Hernia.—Mediastinal hernia results from the distension of a pleural sac. Herniae occur in the anterior mediastinum behind the sternum from the first to the third or even to the fifth rib; and in the posterior mediastinum either aboye the azygos vein from the third to the fifth dorsal vertebra, or below the azygos vein from the fifth to the eleventh dorsal vertebra. Posterior herniation is rarer than anterior. From a developmental point of view two types of mediastinal herniae can be distinguished: Herniation with positive pressure due to air or fluid in the pleural space; the volume is largest during expiration. Herniation caused by negative pressure on the opposite side due to shrinkage and atelectasis of the lung; it reaches its greatest volume during inspiration. Seven cases of anterior herniation in patients with artificial pneumothorax are reported.—*Hernie du médiastin, R. Desmeules & J. Gosselin, Laval méd., November, 1941, 6: 403.*—(*G. C. L.*)

Spontaneous Pneumothorax.—The symptomatology and the treatment of nontuberculous spontaneous pneumothorax are discussed. The outstanding symptom is severe dyspnoea. The aetiology is often the rupture of emphysematous blebs. The treatment depends on the severity of the pneumothorax. In simple cases removal of the air by insertion of a needle into the pleural cavity suffices to reduce the pressure to atmospheric level. When the patient has been relieved of his dyspnoea, the needle is withdrawn. If symptoms recur, the performance may have to be repeated, or continuous underwater drainage is carried out. For this purpose a soft rubber catheter is preferable to a needle to avoid trauma to the

lung on coughing. To remove air until a negative pressure is established is not advisable, because reëxpansion of the lung will prevent closure of the pulmonary fistula. Occasionally the fistula may be held open by adhesions, and when such is the case pneumonolysis produces good results. In stubborn cases the fistula is sprayed through the thoracoscope with substances designed to cause obliteration locally. Injection of 50 per cent glucose into the pleural cavity occasionally produces the desired result.—*Die Behandlung des sogenannten idiopathischen Spontanpneumothorax, A. Brunner, Schweiz. med. Wchnschr., October 18, 1941, 71: 1210.*—(*H. M.*)

Tuberculosis of Kidneys.—Tuberculosis of the kidney has, like pulmonary and bone and joint tuberculosis, decreased during the past few decades However bilateral renal tuberculosis is being reported more frequently than formerly. At the Mayo Clinic 2,200 cases of renal tuberculosis were observed between 1910 and 1934, of which 291 showed evidence of bilateral disease. Previously, 87 of this group were reported by other authors as having nephrectomy; the remaining 204 cases are reviewed, having definitely been proven to have bilateral renal tuberculosis. Thirty-nine, or 19 per cent were women, showing a 4 to 1 preponderance of males as compared with a 2 to 1 ratio in unilateral renal infection; 58.8 per cent were in the fourth and fifth decades. The common symptoms are dysuria and frequency many years previously with recovery and then recurrence of symptoms. Involvement of the bladder is much greater in bilateral than in unilateral renal disease. In some cases pus cells cannot be found in a catheter specimen until repeated examinations have been made and often retrograde pyelography must be resorted to. Pulmonary infection was found in 37.7 per cent, infection of the genitalia in 44.6 per cent, and of the bones in 15.2 per cent. Lupus vulgaris was found in 3 patients, and in the early years of the survey numerous cases of cervical adenitis were found. Renal function is slightly impaired in the early stages but later the combined renal function may often be normal. Hypertension is found to be less frequent in unilateral renal tuberculosis than among average persons and only slightly more frequent in bilateral disease than in unilateral; 71.9 per cent of patients traced, survived 3+ years, 58.1 per cent lived 5+ years, and 15.9 per cent survived at least 15 years. Bilateral renal disease has a worse prognosis if the infection is of equal degree in each kidney, and active pulmonary disease is a dangerous complication. Sanatorium treatment consisting of rest, diet and sunlight undoubtedly make for longevity. The authors believe that unless the indications for nephrectomy are clear cut in bilateral disease, nature should be given a chance.—*Prognosis in Bilateral Renal Tuberculosis, W. F. Braasch & E. B. Sutton, Canad. M. A. J., October, 1941, 45: 320.*—(*W. G. C. M.*)

Pregnancy after Nephrectomy.—This is a report of pregnancy in three patients who had previously undergone nephrectomy for tuberculosis of the kidney. Each of the patients was around forty years of age and had had successful pregnancies prior to the onset of urinary tuberculosis. The first case was first observed when the pregnancy was in the fourth month. The patient had severe urinary symptoms from a contracted bladder which was the seat of a mixed infection. There was also evidence of damage to the remaining kidney and a considerable hydronephrosis was present. Her prognosis was considered hopeless, and it was decided to let her carry the pregnancy to term in an effort to save the child. Caesarean section was successfully performed and the child survived. The mother died a few weeks later in uraemia. The second patient was also permitted to carry to term because there was no evidence of persistent tuberculous infection of the urinary tract. She developed a severe specific toxaemia during pregnancy, and her blood pressure remained elevated following delivery. The third case was observed during the sixth week of pregnancy. She had symptoms due to a contracted bladder, but there was no evidence of active tuberculous cystitis. The

function of the remaining kidney was good. Therapeutic abortion by curettage was decided upon, with a view of performing sterilization later. The available evidence seems to indicate that it is dangerous for women with one kidney to undertake pregnancy, if this condition is due to tuberculosis. All urinary symptoms are aggravated by pregnancy, especially those due to a contracted bladder. Whether women with one kidney are more likely to develop specific toxaemia than normal women is not known. While pregnancy cannot be summarily advised against in these cases, the situation calls for careful consideration of the entire socio-economic set-up. If the patient already has children, and the home conditions are poor, sterilization is advised.—*Schwangerschaft nach Nephrektomie wegen Nierentuberkulose, H. Scherer, Schweiz. med. Wchnschr., September 13, 1941, 71: 1075.*—(*H. M.*)

Gynaecological Tuberculosis.—From 1916 to 1940, 32 proved cases of gynaecological tuberculosis were found in 1,600 autopsies and 38,000 surgical specimens by the Department of Pathology at Mount Sinai Hospital in Cleveland. Tuberculosis was found in the tubes 29 times, in the endometrium in 10, in the myometrium in 6, in the ovary in 3, in the endocervix in 3, in the cervix in 1, in the vagina in one instance. The diagnosis was made preoperatively in only 3 patients, at operation in 13 patients. Most patients had a septic postoperative course. A case report is given of an eighteen-year old Negress. Biopsy of the cervix revealed tuberculous cervicitis. Total hysterectomy and bilateral salpingo-oophorectomy were performed. Tuberculous cervicitis, endocervicitis, endometritis, myometritis, salpingitis, perisalpingitis, perioophoritis and peritonitis were found. The postoperative course was stormy, but eventually the patient made a good recovery.—*Gynecologic Tuberculosis. A Brief Review of Thirty-Two Cases, Including One of Tuberculous Cervicitis, E. Eichner, A. Bookatz & L. Hirsch, Am. J. Obst. & Gynec., January, 1942, 43: 66.*—(*G. C. L.*)

Experimental Tuberculosis of Eyes.—There are numerous reports on the effect of sensitization on the development of ocular tuberculosis but apparently no studies have been made where the lesions were produced by intravenous injection of very small doses of living tubercle bacilli. The authors, however, report such a group. The relationship to the accompanying systemic tuberculosis and especially to tuberculosis in the lung is also given. The test animals were first vaccinated with heat-killed bovine or human tubercle bacilli administered intracutaneously. These rabbits, together with suitable controls, were later infected intravenously with virulent bovine tubercle bacilli. Most received 0.00001 mg. of bacilli, a few, 0.01 mg. Animals were not killed, unless *in extremis*, until two years from the date of infection. Ocular tuberculosis was found present in the eyes of many of these rabbits and its pathology is given in detail. Besides the time of onset and the duration of life, the amount of pulmonary tuberculosis, degree of sensitization to tuberculin and the presence of complement-fixing antibodies are also reported on. The immunized animals in the group receiving the smaller infecting dose all lived longer than did the infected controls and the incidence of tuberculosis of the eye was also considerably less and it appeared later. The small group receiving the larger infecting dose did not show such a favorable relationship. Section of the affected eyeballs showed no significant difference in the type of inflammatory reaction in the two groups. Pigmented chromatophores were found numerous and giant cells relatively rare. *Authors' Summary and Conclusion*: (*1*) Tuberculosis developed in the eyes of 28 (49.1 per cent) of 57 infected control rabbits injected intravenously with 0.00001 mg. of bovine tubercle bacilli. (*2*) Tuberculosis developed in the eyes of 37 (27.2 per cent) of 136 rabbits immunized in various ways with either heat-killed human or bovine tubercle bacilli and subsequently infected with the same dose as the controls. (*3*) Larger amounts (0.01 mg.) of bovine tubercle bacilli produced ocular tuberculosis in 83.4 per cent of 12

infected controls as contrasted with 8 (57.1 per cent) of 14 immunized rabbits. (*4*) Tuberculosis was not observed in the eyes of rabbits infected with the smaller dose sooner than three months after infection. It appeared considerably earlier in the infected controls than in the immunized animals. (*5*) The incidence of ocular tuberculosis was closely related to the amount of tuberculosis in the lungs. (*6*) Tubercles were observed most often in the anterior segment of the eyes and occurred relatively frequently in both the ciliary body and ciliary process. (*7*) Skin sensitivity to tuberculin did not seem to have any influence on either the gross or microscopic characteristics of tuberculosis in the eyes. (*8*) These experiments indicate that tuberculosis develops frequently in the eyes of infected animals. Immunization preceding infection affords some protection against the occurrence of ocular tuberculosis. Reproductions of photomicrographs accompany the article.—*Experimental Ocular Tuberculosis in Normal and Immunized Rabbits, D. M. Angevine & R. W. Huntington, Jr., Am. J. Path., March, 1941, 17: 155.*—(*J. S. W.*)

Tuberculoma of Hypophysis.—Tuberculosis of the hypophysis is extremely rare. This involvement may be associated with, or secondary to, the following conditions: acute miliary tuberculosis, nearby tuberculous meningitis or osteomyelitis of the sphenoid bones or a haematogenous metastasis with formation of large, slowly growing conglomerate tubercles. The first two forms are acute and run a rapid course. The third type may progress to produce local symptoms and various syndromes as the result of pressure on the pituitary gland and surrounding structures. The lesion may result in the manifestations of any nonspecific expanding lesion in this area of the brain. The clinical picture of adiposogenital dystrophy can also be produced from involvement of the diencephalon or the hypothalamus. Diabetes insipidus can result from tuberculosis of the neurohypophysis. Pituitary cachexia, Simmond's disease, is only rarely caused by tuberculosis. The authors observed two cases of tuberculoma of the hypophysis with postmortem examination. One patient was a thirty-seven year old woman who presented the clinical picture of Simmond's disease. At necropsy, in addition to the pituitary tuberculoma, there was an area of healed fibroindurative tuberculosis in the apex of the right lung. The other patient was a forty-four year old male with eunuchoidism, blindness and deafness. At autopsy, there was found a sclerosed tuberculoma of the anterior lobe of the pituitary, atrophy of the adrenal cortex and fibricaseous primary complex in the lower lobe of the right lung.—*Tuberculoma of Hypophysis with Insufficiency of Anterior Lobe, J. D. Kirshbaum & H. A. Levy, Arch. Int. Med., December, 1941, 68: 1095.*—(*H. R. N.*)

Tuberculous Peripheral Arteritis.—A twenty-one-year old woman noticed the gradual onset of sore throat and dysphagia in her sixth month of pregnancy. On examination the tonsils were found to be covered with grayish-white membranes; there was an area of ulceration extending from the tonsils to the anterior pillars and the soft palate; the lower lobes of the lungs were consolidated. Suddenly signs and symptoms suggestive of an acute embolic occlusion of the left femoral artery developed. The patient died six days later. Necropsy showed generalized miliary tuberculosis involving practically all organs. There was a tuberculous arteritis of the external iliac artery due to embolism originating from thrombophlebitis of the lungs. The lumen of the artery was filled with a caseous white thrombus, and there were areas of inflammation and caseous necrosis in the intima and media and proliferation of connective tissue and vascular endothelium, with infiltration of lymphocytes and epithelioid cells in the adventitia. Tubercle bacilli were demonstrated in the thrombus, in the arterial wall and in the disseminated tuberculous lesions.—*Tuberculous Peripheral Arteritis Associated with Tuberculous Thrombophlebitis in the Lungs, W. Neel & L. G. Herrmann, Am. Heart J., November, 1941, 22: 702.*—(*G. C. L.*)

Tuberculosis of Mandible.—Tuberculosis of the mandible is a rare disease. Four case

reports are given and the observations on 19 cases which were partly reported previously are discussed. Tuberculosis of the mandible affects both sexes practically equally. The age of the patients ranges from four to forty-eight years. The onset is usually very insidious. Attacks of so-called "toothache" occur. Local swelling is observed. The swelling gradually becomes soft and eventually ruptures spontaneously either into the oral cavity or externally along the inferior border of the lower jaw. Forty-nine and one tenth per cent of the cases had tuberculous lesions in other bones. In 14 cases the chest was examined roentgenologically and evidence of tuberculosis of the lungs or pleura was observed in 100 per cent. Roentgenograms show necrosis of bone without evidence of involucrum. Among these 19 cases of tuberculosis of the mandible, the diagnosis was established in 15 by histologic study of excised tissue.—*The Diagnosis of Tuberculosis of the Mandible, C. M. Meng, Chinese M. J., August, 1941, 60: 169.*—(*G. C. L.*)

Syphilis of Vertebra.—Three cases are presented to demonstrate that vertebral syphilis can be diagnosed roentgenographically and differentiated from other lesions involving the spinal column. "In all, though one or more of the bodies had undergone extensive destruction, there was complete absence of collapse, due to pronounced sclerosis and hyperostosis." There was no wedging in spite of severe destructive changes. Differentiation from tuberculosis is not difficult, as tuberculous vertebrae show decalcified areas at an early stage, the body often collapses and wedge formation will occur. Syphilis is chiefly located in the ventral part of the body while tuberculosis occurs close to the intervertebral disk. Destruction of the latter is common in tuberculosis and infrequent in syphilis. Cold abscesses are never found in vertebral syphilis but are found in the majority of cases of vertebral tuberculosis. Vertebral syphilis usually extends over a greater part of the vertebrae than tuberculosis. Lymphogranulomatosis is also characterized by decalcification of the vertebral bodies. Osteomyelitis offers little difficulty in diagnosis as sclerotic condensation of bone substance occurs only in the healing stage of osteomyelitis. Osteoplastic tumor metastases are more widespread than tuberculous or syphilitic involvement.—*Roentgenographic Diagnosis of Vertebral Syphilis, M Sgalitzer, Radiology, July, 1941, 37: 75.*—(*G. F. M.*)

Cyst of Lung.—A routine roentgen examination discovered in a man forty-two years old a typical cyst image occupying the superior half of the right pulmonary field. Eight years later the patient shows practically the same radiological aspects. Bronchography with lipiodol reveals that the bronchi of the right upper lobe have been displaced downwards: the bronchi of the right lower lobe were slightly increased in size and alveolar filling was not seen in the inferior part of the pulmonary field. The bronchoscopical study showed an abnormal visualization of the right upper lobe bronchus. The patient has had no history of pulmonary disease and the sputum has been always negative.—*Quiste aéreo de pulmón., A. A. Raimondi & I. M. Hernández, Arch. argent. de tisiol., January–March, 1941, 17: 5.*—(*J. A. T.*)

Metaplasia in Cystic Lung Disease.—Any correlation between a particular microscopical picture and the extent, and therefore the operability, of the lesion in lung cancer is so often hazardous that various morphological classifications based on the microscope are all of little clinical value. However, there is a type of tumor which can be set apart from the more classical type of bronchogenic carcinoma. It has a definite clinical picture. It is seen in females as often, if not oftener, than in males. It usually occurs in young people and exhibits a protracted course judging from symptoms which may date back a number of years. The pathological picture is different from the usual type of carcinoma in the sense that the lesion protrudes into the bronchus as a nodule covered with epithelium. The tumor cells often resemble unaerated fetal lung tissue and mesodermal tissue may be present. On removal it is noted that the tumor is often collar-button-

shaped with the larger portion extending into the lung parenchyma. It may or may not have metastasized. Almost universally there is present some type of congenital abnormality of the lung tissue. This lesion is, therefore, probably one intimately connected with congenital malformation of the lung. Thus, one must recognize two main types of bronchial tumors, one the classical type of carcinoma which is much more frequent in males after middle age and which spreads rapidly, and this other type which probably arises in tissues of embryonic type, is generally associated with pulmonary disorganization, does not favor either sex and may remain in the same site for many years before invading other tissue. This type includes the tumor which in the literature is commonly diagnosed as bronchial adenoma. If such a conception is true, one should occasionally be able to find evidence of overgrowth in the epithelial elements of disorganized pulmonary tissue before such overgrowth is evident clinically. With this in mind, certain cases of congenital cystic disease of the lung were carefully studied. There were 9 such patients, 6 of whom were treated by total pneumonectomy and 3 by lobectomy. All this material presented severe secondary infection with concomitant distortion of the anatomical picture. In 3 of the patients evidence was found of abnormal epithelial overgrowth. This consisted, for the most part, of masses of poorly differentiated epithelial cells tending to appear as spindle cells or cuboidal cells, showing a definite tendency towards invasion, but nowhere presenting any evidence of metastasis. In none of these specimens was the lesion apparent to the naked eye. The article includes case histories of the 3 patients studied together with 3 plates.—*Epithelial Metaplasia in Congenital Cystic Disease of the Lung. Its Possible Relation to Carcinoma of the Bronchus, N. A. Womack & E. A. Graham, Am. J. Path., September, 1941, 17: 645.*—(*J. S. W.*)

Tumors of Lung.—Two cases of fetal tumors of the lung are described. In one case the tumor replaced an entire lower lobe and showed the histology of a very early fetal lung. In the other case alveoli were found filled with "fetal cells." In two other cases bronchoscopic specimens were examined: In one of these alveoli filled with "fetal cells" were seen; in the other case mixed mesenchymal and endodermal structures were present. It is believed that many of the benign bronchial adenomata are of embryonic elemental origin. The suggestion is made to call these tumors "anlagen and rest tumors" of the lung instead of "mixed tumors."—*Anlagen and "Rest" Tumors of the Lung, W. H. Harris & H. J. Schattenberg, New Orleans M. & S. J., January, 1942, 94: 333.*—(*G. C. L.*)

Adenoma of Bronchus.—The author reviews about 100 cases gleaned from the literature, to which are added 22 of his own. The condition is equally frequent in both sexes. In 70 per cent of the cases, symptoms first appeared in the third and fourth decades of life, the average age of onset being twenty-eight years. The aetiology is obscure; there is no proven relationship to occupation or to previous pulmonary disease. The long history of symptoms before diagnosis (cf. carcinoma) is noteworthy; the average duration was five years and in 87 per cent of cases symptoms had existed for over one year. Symptoms may be divided into two groups, those due to tumor, and those due to bronchial obstruction and resulting lung infection. In the first group, the chief symptoms are haemoptysis and cough. Haemoptysis was found in 81 per cent of cases. It is generally recurrent with periods of intermission and usually is not profuse; the bleeding starts and stops abruptly, and the blood is expelled promptly. There is a definite relationship between bleeding and time of menstruation. The symptoms of bronchial obstruction, which comprise group two, are usually gradual in onset but may be abrupt. Dyspnoea was seen in 31 per cent of cases. It may be progressive, and related to exertion, or may take the form of asthmatoid paroxysms. The symptoms resulting from infection are expectoration, pleuritic pain and fever. In over 60 per cent of cases, bronchiectasis, lung abscess or empyema resulted. In the early stages, an

ordinary roentgen film may disclose no abnormalities. Later patchy or complete collapse of one or more lobes is generally seen. From the beginning, a bronchogram will reveal a filling defect or occlusion of the bronchus. On bronchoscopic examination there is no widening of the carina. The tumor is pinkish-white and vascular; it is generally pedunculated and bleeds easily; there is no infiltration of surrounding tissue. The prognosis depends upon early recognition; it is particularly good if the diagnosis is made before atelectasis or infection appear. In the author's series, 15 patients are living and 7 are dead. Of 17 deaths recorded in literature, 10 were caused by infection. There is no recorded case of an adenoma becoming malignant. Cases of adenoma are often erroneously diagnosed as carcinoma and less frequently as tuberculosis or pneumonia. Adenomata always arise in one of the larger bronchi; the right side is involved twice as commonly as the left. The tumor frequently extends through the bronchial wall and then expands extrabronchially, resulting in a dumbell-like topography. The characteristic cell is cuboidal in shape; the scanty clear cytoplasm forms a ring around a large, round or oval nucleus. Uniformity in type and staining reactions of the cells, tendency to develop along glandular lines, absence of invasion of blood vessels and bronchial nodes, absence of nuclear irregularities and mitoses are the outstanding features. The cells arrange themselves in two patterns: (*1*) typically adenomatous, and (*2*) as irregular masses of cells. The latter type is easier to confuse with carcinoma, especially when the specimens have been distorted by trauma or infection. Various theories have been offered as to the origin of these lesions, for none of which has adequate proof been offered. The best treatment is to remove the tumor and prevent recurrence; the latter is usually due to pieces left in the mucosa or in extrabronchial extensions. Insertion of radon seeds following removal seems to give the best results. Deep roentgen therapy has not proven effective. In 3 cases in the literature, radical operations were performed; death resulted in 2 cases, and a cure in one. Of 5 of the author's own cases, submitted to operation, the procedure had to be abandoned in 3, and 2 had successful lobectomies.—*Bronchial Adenoma, A. F. Foster-Carter, Quart. J. Med., July, 1941, 10: 139.*—(*A. G. C.*)

Bronchogenic Carcinoma and Pulmonary Asbestosis.—Two cases of bronchogenic carcinoma in association with pulmonary asbestosis are reported. Also, the 8 other cases reported in the literature are referred to. Both cases were male workmen who had been engaged more or less continuously for twenty-five years in the asbestos industry and whose duties entailed the covering of steam and water pipes with asbestos fabric, etc. Both had had cough, expectoration and dysponea for a long period preceding admission to the hospital. The post-mortem examination in one revealed a squamous-celled carcinoma and in the other a large oat-celled carcinoma. Both tumors were bronchogenic in origin, had metastasized and were associated with easily demonstrable asbestosis as evidenced by the presence of diffuse interstitial pulmonary fibrosis, asbestosis bodies, macrophages and giant cells. As silica constitutes a significant portion of the asbestos fiber, determinations of silica were carried out with the idea that the demonstration of definitely increased values would furnish additional confirmation of the diagnosis of asbestosis. The dried lungs of one case yielded 240 mg. per cent of this substance but, in the other, only 4.5 mg. per cent were found. It has been stated that lungs may contain as much as 200 mg. per cent (of silica) without showing histological evidence of silicosis. Using this value as a standard, the silica content in one case would be only slightly elevated and in the other would definitely fall within known nonpathological limits. To explain this discrepancy the authors point out that inhaled asbestos fibers undergo dissolution and phagocytosis and may eventually disappear entirely, leaving behind irreparable damage. The elimination of asbestos by expectoration is an additional, though probably minor factor. Both these individuals were employed for long periods in occupations in which the exposure to asbestos

dust was relatively low. The extensive damage present could have resulted as a summation effect without appreciable accumulation of asbestos in the lungs at any one time. The case showing only a small amount of silica had not worked with asbestos for ten years before death. In a review of the autopsy material at the Queens General Hospital for a five year period it was of striking significance to find bronchogenic carcinoma in the only 2 cases of pulmonary asbestosis in the group, those reported here.—*Bronchiogenic Carcinoma Associated with Pulmonary Asbestosis, Report of Two Cases, H. B. Holleb & A. Angrist, Am. J. Path., January, 1942, 18: 123.*—(*J. S. W.*)

Silicosis.—A diagnosis of silicosis was made in 3 fireclay miners. Pure fireclay contains combined silicates but no free silica and is consequently not a silica risk. The fireclay, however, to which these miners were exposed was analyzed and found to contain harmful quartz grains. In addition the miners were also working with a mottled clay which contains a substantial amount of free silica. One of the reported patients died and postmortem examination of the tissues confirmed the diagnosis. The remaining 2 patients are still alive and have received certificates of disablement from the Silicosis Medical Board.—*Silicosis in Stourbridge Fireclay Miners, S. Deaner, Lancet, October 11, 1941, 2: 417.*—(*J.B.*)

Cavities in Silicotic Lung.—The presence of a cavity in any lung has a serious clinical import. In the silicotic lung more cavities are observed at autopsy than are recognized during life by X-ray or physical examination. It is possible to differentiate three distinct types in these cavities: (*1*) *Typical tuberculous* cavities developing most often in persons with minimal silicosis. (*2*) Cavities of a modified form occurring in an area of *tuberculo-silicosis*, an extremely chronic condition resulting from the combined local effects of tubercle bacilli and silica dust. (*3*) Cavities of the so-called *anaemic type* which develop within areas of massive fibrosis but show no evidence of causative organisms or cellular reaction. The origin and development of cavities of the first named type are essentially the same as those of uncomplicated pulmonary tuberculosis. Tubercle bacilli can be readily demonstrated in the contents or walls of these excavations. Either the amount of silicosis present or the state of its activity seems to have been insufficient to modify the course of the tuberculous infection. In the second group the excavations are invariably found within areas of massive, hard, black to gray conglomerate fibrosis. Most of them are small and unilocular. The content of these cavities is purulent, but inky-black. Trabeculation is rare. The most important feature of these cavities is the zone of dense black fibrous tissue which surrounds them. The usual necrotic membrane is extremely thin, often incomplete, and simulates that observed in simple necrosis rather than in tuberculosis. There is no intermediate zone of hyperaemic granulation tissue. The zone of conglomerate fibrosis surrounding the cavity is usually extensive and its tuberculous components hard to identify since they are modified by the particles of silica present. Even the cavity itself may show histopathological characteristics that are hard to recognize as tuberculosis, and in some instances, bacteriological methods must be employed for diagnosis. The complications of ordinary tuberculous cavities rarely accompany excavations of the tuberculo silicotic type. Haemorrhage is rare until late due to the avascularity of the cavity wall. The same factor retards haematogenous dissemination of bacilli for miliary tuberculosis is uncommon. Spread by aspiration throughout the lungs and elsewhere is also rare. Type-3 cavities, the anaemic type, also are found within pigmented areas of conglomerate fibrosis. These cavities are usually small, elongated and slit-like, although some may be of considerable size. Their content is ink-like but more fluid than in ordinary cavities and not purulent. These cavities, instead of a well defined inner zone, show only indefinite, ragged, seminecrotic tissue of the same color as the surrounding fibrosis. Their important feature is the absence of histo-

pathological and bacteriological evidences of infection. Tubercle bacilli cannot be demonstrated. These anaemic cavities are probably due to a local deficiency in the blood supply, although the toxic action of high concentrations of silica may play a part. The avascularity of the silicosis lesion results in areas of local necrosis which, because of autolysis, ultimately liquefy and excavate. All these types of cavities may occur in any part of the lung, but are most frequent in the upper lobes. In the lower lobes their incidence, especially of type 2, is nearly twice as great as in uncomplicated tuberculosis. The clinical problem in cases with typical tuberculous cavities is primarily one of diagnosing the concomitant silicosis for which the X-ray film is useful. In the tuberculo-silicotic subject the clinical problem is more difficult. The modifying effect of the silicosis upon the tuberculous element alters the picture so that the symptoms exhibited are characteristic of neither of the conditions in uncomplicated form. Hence, tuberculo-silicosis must be regarded as a separate disease entity. Patients with tuberculo-silicosis, as a result of the general avascularity and consequent retardation of absorption of toxic material, seldom experience the loss of weight, weakness, fever and other toxic manifestations of uncomplicated tuberculosis. The sputum often remains negative until late in the course of the disease. Spread of the disease seldom shows early and secondary complications from bronchogenic dissemination are much less frequent than in ordinary tuberculosis. The anaemic cavities are usually not demonstrated during life. When found they are generally considered as tuberculous cavities. Of themselves they do not cause recognizable clinical symptoms.—*Cavities in the Silicotic Lung. A Pathological Study with Clinical Correlation, A. J. Vorwald, Am. J. Path., September, 1941, 17: 709.—(J. S. W.)*

Silicosis in Dressmakers.—The author criticizes a recent publication which claims a high incidence of silicosis among dressmakers. The statement was made in the article to which the author refers the reader that dressmakers acquire silicosis due to exposure to mordants and to handling of new materials in cutting. According to the author, mordants contain negligible quantities of free talcum and practically no free silica at all. From this point of view, it is erroneous to speak of silicosis. However, not even pneumonoconiosis can be claimed in these workers, because dressmakers are not concerned with applying the mordant. As far as mordant workers are concerned, the contact with dusts containing free silica is too short and the concentration of free silica is too low to permit of recognition of an occupational hazard. The author is backed by forty years of industrial experience.—*A propos de la soi-disant "silicose (par le talc) des couturières," L. Carozzi, Schweiz. med. Wchnschr., September 20, 1941, 71: 1100.—(H. M.)*

Bronchiectasis.—The natural history of bronchiectasis is surveyed, based upon a review of the literature together with a study of 68 cases including examination of lobes excised at operation in 28 patients. Dissection of a normal lung revealed that bronchial branching is monopodial as far as the finer bronchi where dichotomy becomes the method of choice. Dichotomous branching is followed as far as the alveolar ducts except where it conflicts with the law of the economy of space. Bronchial peristalsis is an important factor in ridding the lung of secretions. All intrapulmonary bronchi are completely surrounded by air cells which act as an air cushion. Atelectasis deprives the bronchi of this air cushion and renders them liable to dilatation. Thirty five lobes were removed from 28 patients in this series. Pleural involvement was the rule; marked thickening occurred in 25 specimens and minor changes in only 10. Twenty two specimens showed extensive or apparently complete collapse. In the majority, more or less severe bronchial destruction was present and all showed well marked inflammatory changes. Patchy or confluent bronchopneumonia and emphysema were common. Endarteritis was noted in all the specimens. Lymphoid hyperplasia and pronounced increase in the number of bronchial mucous glands were conspicuous. The pulmonary

collapse was never complete. There was evidence of constant replacement of destroyed elements by granulation tissue, indicating the importance of infective processes. In this manner, the function of the bronchi in removing secretions is seriously impaired. The normal bronchus can easily withstand intrabronchial pressures of 10 to 20 cm. of water. When pulmonary collapse occurs, the negative intrapleural pressure rises, the "air cushion" supporting the bronchi is removed and, consequently, the real intrabronchial pressure rises with resulting greater stress on the bronchial wall. Such changes have been shown to produce dilatation of normal bronchi and, therefore, undoubtedly, markedly dilate diseased bronchi. Pulmonary collapse is the only stress and strain which has been shown to produce bronchial dilatation although various other hypotheses have been advanced. Bronchial dilatation does not always mean that the bronchi are diseased. Two cases in the present series were regarded as examples of congenital cystic disease but diagnosis was not certain. There was no particular sex incidence in this series. In 45 of the 68 cases (66 per cent), symptoms dated from the first five years of life. In a number of the remaining cases, symptoms dated from later childhood. Early recognition and treatment in childhood will improve therapeutic results.

The direct etiological factors can be classified under (*1*) causes of bronchial damage and (*2*) causes of abnormal bronchial strain. Under the first heading can be included infections such as bronchopneumonia, lobar pneumonia and bronchitis. Chronic pulmonary abscess is frequently accompanied by bronchiectasis. Suppurative pneumonitis has recently claimed attention as a cause of bronchiectasis. Inorganic dust and irritant fumes have been mentioned as causes of bronchiectasis but they played no rôle in this series. Influenza, measles and whooping cough predispose to bronchopneumonia with subsequent bronchial damage. Chronic sinusitis may reinforce an existing pulmonary infection. Sinus infection may also arise in patients who are expectorating much purulent sputum. In only 13 of the author's 68 cases could sinusitis be demonstrated. Bronchial obstruction produced by foreign body, viscid secretions, adenoma, inflammatory or neoplastic stricture is an important factor in favoring persistence or extension of bronchial infection. Extramural obstruction is usually caused by pressure of aortic aneurism, or neoplastic or tuberculous nodes. Infection does not persist when obstruction is complete. Clinically, obstruction is rarely complete for more than a short time. The causes of abnormal bronchial strain are mainly included under causes of lobar or pulmonary collapse. The longer the lung remains collapsed the more likely is bronchial dilatation to be permanent. Restoration to normal is possible after several months if reëxpansion can be induced. Pleural effusion and pneumothorax are less likely to produce immediate bronchial dilatation because of high pleural pressure. Early diagnosis is, at present, not common. In this series, average duration of symptoms before diagnosis was eleven years. In all cases, cough of varying severity was an original symptom. The onset was insidious in 43 per cent and could not be related to any definite cause. The absence of sputum is compatible with a diagnosis of bronchiectasis but is not proof of the absence of bronchial infection. Haemoptysis was noted in only 7 cases although there was streaking in 8 other cases. Wheezing, either persistent or occurring in asthmatoid episodes, was present in 10 cases. A fairly characteristic feature of the disease is recurrence of short periods of acute febrile exacerbations. In 39 patients (57.3 per cent), there was definite clubbing of fingers and toes. Clubbing was more frequent in patients with purulent sputum and most frequent in those with foetid sputum. Sixty patients (88 per cent) enjoyed good general health. A fairly accurate presumptive diagnosis of bronchiectasis can be made on the basis of history and physical signs. X-ray, including bronchography, are essential for confirmation of the diagnosis. In this series, disease of the lingula was associated with left lower lobe disease in 10 cases whereas there was disease of the left lower lobe alone in 25 patients. The disease was unilateral in 53 patients and

bilateral in 12. The ectasia was unilobar in 38 and multilobar in 27. There was only one case of apical bronchiectasis which may be accounted for by low incidence of tuberculosis in this series. Bronchoscopy is of value more as a guide to the surgeon than as a diagnostic aid. For purpose of classification, the only satisfactory criterion is the bronchogram. In this series, the cases could be classified as follows: atelectatic bronchiectasis, 42 (61.8 per cent); bronchogenic or bronchopneumonic bronchiectasis, 24 (35.2 per cent); combined forms, none; congenital cystic disease, 2 (3 per cent). In the atelectatic type, medical measures, such as postural drainage, bronchoscopy and breathing exercises, are more likely to succeed, mainly in the early stages when reëxpansion may result. In most cases of the bronchopneumonic type, surgery will be necessary and this should not be postponed beyond childhood unless infection is slight. Prognosis is very uncertain in bronchiectasis. In general, foetid expectoration is an unfavorable sign, the mortality being almost double that of patients without foetid sputum. Clubbing of the fingers is a less valuable sign but the figures tend in the same direction. The mortality in the atalectatic group is more than twice and the operative mortality nearly four times that of the bronchogenic group. Duration of symptoms did not appear to have any bearing on prognosis. The operative risk rises rapidly with age once childhood is left behind. Persistent albuminuria, usually indicating amyloid disease, is an unfavorable prognostic sign. Cardiac failure and brain abscess are not infrequent terminal complications. Acute sepsis is a rare complication.—*The Natural History of Bronchiectasis, A. G. Ogilvie, Arch. Int. Med., September, 1941, 68: 395.*—(*H. R. N.*)

Untreated Bronchiectasis.—The authors present facts based upon a follow-up study of 242 cases of bronchiectasis diagnosed by X-ray studies or bronchography at the Jefferson Medical College Hospital between 1925 and 1935. Only those cases of bronchiectasis which presented no known aetiological agent are included in the study. For the purpose of the study only data on the living patients who have not had regular bronchoscopic treatments and those not subjected to major surgical intervention are included along with the data on patients who have died from bronchiectasis or its complications. The total number of patients in these groups is 171. Of the 171 patients, 112 were found to be living; 59, or 34.5 per cent had died of bronchiectasis or its complications. The average duration of life in the dead patients from the onset of symptoms was thirteen and one-half years. Of the 112 living patients, 60 were found to have sinus disease, and 55 had suffered from such complications as otitis media, pneumonia, empyema, pleurisy and haemorrhage, the last in 31 cases. Of the dead patients, 23 of the 59 died from pneumonia, 5 from brain abscess, 6 from pulmonary abscess and gangrene, 6 from associated tuberculosis and only 3 from haemorrhage. Sinus disease was known to be present in 26 of the 59 cases.—*The Fate of Patients with Untreated Bronchiectasis, H. H. Bradshaw, F. J. Putney & L. H. Clerf, J. A. M. A., June 7, 1941, 116: 2561.*—(*G. L. L.*)

Coccidioidomycosis.—Hitherto most of the reported cases of coccidioidal infection have been reported from California but evidence is accumulating that foci for the infection exist in areas outside California. The author reports the case history of 5 patients from a total of 10 who developed coccidioidomycosis in Arizona. He also reports that a very large percentage of the Indian school children and up to 30 per cent of patients in the Pima County General Hospital reacted positively to the coccidioidin cutaneous test. From the literature and from personal observation the author feels that, as in tuberculosis, the initial infection constitutes a primary-like complex which usually heals, and that secondary chronic progressive disease follows in a certain percentage of cases. A diagnosis as against tuberculosis and blastomycosis can be made with certainty only by finding the characteristic spherules in the tissues, pus or sputum and confirming by culture and guinea pig inoculation. A good routine diagnostic

method is to concentrate the material from a suspected patient and examine the sediment in a wet preparation without staining for spherules. Part of the sediment is then cultured on Sabouraud's medium and part injected intraperitoneally and intratesticularly into guinea pigs. Clinical features of pulmonary infection are often those of a "cold" suggesting influenza and not infrequently pneumonia or tuberculosis. Cough and sputum, which may be blood stained, pleural pain, chills, fever, nocturnal sweats, loss of weight and strength, malaise, weakness and general debility are present in varying degrees. Tender, painful joints may be observed in early, acute infection. Blood eosinophilia and erythema nodosum may be observed and should be considered manifestations of coccidioidal infection. Roentgenograms of the chest show hilar thickening and dense shadows scattered through the pulmonic fields. Cavitation occurs which, with the surrounding infiltration, is indistinguishable from tuberculosis until analysis of the sputum reveals the true nature of the infection. Gastric washings are frequently necessary to obtain material for study. Recovery from the acute phase of this infection occurs commonly in a few weeks to a few months time. There may occur dissemination of the organism to other parts of the body, which eventuates in a chronic, progressive disease, with a case fatality rate of 50 per cent. In treatment no definite specific results have been noted from any drug therapy.—*Coccidioidomycosis, O. J. Farness, J. A. M. A., April 19, 1941, 116: 1749.*—(*G. L. L.*)

Pulmonary Cavities in Coccidioidal Infection.—Acute primary coccidioidomycosis is endemic in central California, parts of Arizona and Texas and the Chaco regions of Argentina. X-ray changes in the lungs are not unusual and may closely simulate pulmonary tuberculosis. During the acute stage, the spherules of *C. immitis* are present in the sputum. Seven to fourteen days after the acute infection, sensitivity to coccidioidin develops. When pulmonary involvement is present, recovery may be followed by complete clearing or may leave residual caseous or calcified foci or cavitation. Pulmonary cavities in the acute infection are not common, but they are probably more frequent than is realized since spontaneous closure is not unusual. When pulmonary cavitation is seen by X-ray, the resemblance to tuberculosis is more striking. It is of the greatest importance to differentiate these diseases since prognosis and treatment are very different. Coccidioidal cavitation is a benign process and the prognosis is entirely favorable. Prolonged sanatorium care is unnecessary and these patients may return early to unrestricted lives despite the presence of a "burned out" or latent pulmonary cavity. It is especially important not to employ collapse procedures or surgery in an attempt to close these cavities. Exceptionally, pneumothorax may be employed if haemoptysis occurs frequently or if the cavity is in an active phase. These patients are not a menace from the public health standpoint. Clinically, there is a striking absence of severe constitutional symptoms despite the existence of pulmonary cavitation, haemoptyses or spherule-laden sputum. *Coccidioides immitis* is found in the sputum of these patients and its identity can be established by culture and animal inoculation. As in tuberculosis, gastric aspiration may be necessary to demonstrate the organism. Characteristically, coccidioidal cavities appear thin walled and "punched out" on the roentgen picture. There is little or no surrounding reaction. In no case with cavity did clinical or roentgen follow-up studies, varying from a few months to several years, disclose any evidence of dissemination of the infection or progression of the disease. From this it would appear that immunity is produced in the host by the primary infection. These cavities are termed "latent" rather than healed since they harbor the spores. Many of these patients, mistakenly considered tuberculous, have been subjected to prolonged unnecessary treatment including collapse measures. Blood streaked sputum is a common finding in these patients. Thirteen illustrative case records are detailed.—*Pulmonary Cavitation Associated with Coccidioidal*

Infection, W. A. Winn, Arch. Int. Med., December, 1941, 68: 1179.—(H. R. N.)

Pulmonary Oedema.—Little can be found in the literature relative to the roentgen appearance of pulmonary oedema and what is available emphasizes the classical roentgen picture. This has been described as a butterfly-shaped, fairly symmetrical density involving both lungs, greatest at the hilum and gradually fading out toward the periphery. This is the chronic type of pulmonary oedema such as occurs in renal disease. However in most instances pulmonary oedema is an acute condition. Since the experience of the authors indicated numerous variations from the typical, all cases seen at the University of Minnesota Hospital in which pulmonary oedema was found at necropsy were reviewed. During the five year period studied there were numerous instances of slight oedema of the lungs not considered of any moment, but there were 110 cases in which pulmonary oedema was moderate to marked. The average age of the group was fifty-seven years, the youngest being three months and the oldest eighty years of age. The cases were classified according to the primary cause of death as follows: carcinoma 17, vascular 20, miscellaneous 22, surgical 26 and renal disturbances 8. The remaining 17 were almost equally divided between cirrhosis and acute degeneration of the liver, blood dyscrasias, burns and septicaemia. Twenty-six cases regarded as surgical deaths died within one to three days after a major procedure. Attention is called to the large amounts of fluid given the majority of these patients and the fact that the oedema so induced was doubtless a factor in the fatality. Physicial findings in most instances gave no indication of the onset of the complication. The degree of coronary sclerosis associated with pulmonary oedema was surprisingly small. Severe coronary sclerosis was found in only 10 cases. The average weight of the right lung was 105 g. more than the left. In 5 instances the oedema was entirely localized in one lung while in 19 cases the oedema was so marked that each lung weighed over 1,000 g. Eighteen cases were found in the group with adequate roentgen studies. Seven of these are reported in detail to demonstrate both the typical and atypical roentgen findings. In one case lateral films show the oedema to be central with the periphery of the lung clear posteriorly as well as anteriorly and laterally. Early pulmonary oedema is demonstrated in another case. Here the fluid is collected in small groups of alveoli in the perivascular areas giving the roentgenogram an irregular stippled appearance which might be confused with miliary tuberculosis or capillary pneumonia. Later these densities become confluent. Oedema was found to be localized to one lobe in 2 cases, to an entire lung in one case and to the upper lobe alone in others. Slight oedema was usually present in the remainder of the lungs. The differentiation from pneumonic consolidation or pulmonary infarct is obviously difficult. However the tendency for oedema to give a clearer periphery is of some help. The authors are of the opinion that intravenous and subcutaneous fluids are an important factor in the development of pulmonary oedema in post-operative patients, that coronary disease is an infrequent factor, that physical findings are often minimal in the presence of extensive roentgen findings and that the classical butterfly-shaped density does not occur in the majority of cases and may simulate pulmonary infarct or pneumonia. Although it cannot always be diagnosed when atypical, it should be considered in cases of cardiac failure, renal disease, liver disease after operations and following transfusion reactions. *—Roentgen Manifestations of Pulmonary Edema, C. B. Nessa & L. G. Rigler, Radiology, July, 1941, 37: 35.—(G. F. M.)*

Abscess of Lung.—Observations on 10 cases of pulmonary abscess are reported. The most common symptoms and signs were: productive cough, chest pain, hectic temperature. Five cases showed pulmonary haemorrhage, six cases had foetid expectoration. Moderate leucocytosis with polynucleosis was seen. The physical findings were not characteristic. Roentgenologically there was evidence of abscess formation in 7 cases. The treatment

consisted in postural drainage and administration of Neo-prontosil. Four cases developed empyema. Six patients died, 3 were improved, one was unimproved.—*Observations in Ten Cases of Pulmonary Abscess, I. R. Rodriguez, Bull. Quezon Inst., July, 1941, 2: 15.*—(*G. C. L.*)

Syphilis of Lung.—A case of the gummatous form of pulmonary syphilis is reported. The diagnosis was made during life. The patient gave a history of an intractable ulcer on the upper end of her left fibula, a swelling over the left molar bone, a chronic cough with scanty, occasionally blood-streaked sputum for three years and the recent advent of marked dyspnoea. Blood Wassermann and Kahn reactions were positive. Roentgenogram of the chest revealed an irregular opaque shadow in the left upper zone and a smaller opacity in the lower zone near the root of the lung. After the institution of antisyphilitic therapy, the pulmonary lesion improved and the patient was very much relieved of symptoms. The criteria on which the diagnosis was based are (*1*) length of history, (*2*) positive serological findings, (*3*) absence of tubercle bacilli in the sputum, (*4*) therapeutic test with antisyphilitic drugs, (*5*) presence of syphilitic lesions elsewhere.—*A Case of Syphilis of the Lungs, A. Clark, Lancet, October 11, 1941, 2: 420.*—(*J. B.*)

Treatment of Asthma.—The combination of theophylline with mono-ethanolamine provides a satisfactory agent (theophylline monoethanolamine) for oral or intravenous use, and has been found to be of therapeutic value in paroxysmal dyspnoea. The authors present the results of a study of 153 patients so treated. These patients come from two sources and are composed of individuals of widely varying types. Those from the Los Angeles County General Hospital (112 patients) experience the more severe asthma. A higher ratio of them are nonsensitive and present other conditions typical of the nonallergic patient. The smaller group (41 patients) is a counterpart of the first and a large proportion represent the uncomplicated allergic problem. Each patient was included because of refractoriness to conventional therapy. The maximum quantity of drug administered by mouth represents little more than the minimum recommended for its action on the heart and circulation. Amounts so small as from one-tenth to one-fifth of the conventional dose for intravenous use may be effective even though symptoms are most severe. Approximately 10 per cent of the patients only are classified as obtaining "no relief." Several of these did not complete the trials, others failed to return for observation and a few reached the maximum doses of 0.4 g. without benefit. Untoward reactions were inconspicuous and tended to be limited to the first few doses. Unexpected beneficial side effects were observed. Nasal symptoms, with or without asthma, and such refractory conditions as urticaria and angioneurotic oedema have been controlled by the drug. Because of the evident usefulness of this drug in small doses by mouth—and of smaller amounts intravenously—and the slow development of tolerance even to the smaller quantities, the authors anticipate that it will be a valuable adjunct if not a substitute for ephedrine in the treatment of asthma.—*Treatment of Asthma, R. W. Lamson & L. C. Bacon, J. A. M. A., March 8, 1941, 116: 915.*—(*G. L. L.*)

Erythema Nodosum.—There is no unanimous agreement regarding the aetiology of erythema nodosum, but, in general, the consensus is that there is no one specific infection or toxic agent responsible for the disease. In children the majority of cases are considered as due to tuberculosis, but in adults the problem is by no means settled. Since little attention has been given to the pulmonary roentgenological aspects of erythema nodosum, a series of cases in which roentgenograms of the lungs were made is reviewed. In a group of 20, 19 of whom were adults, 12 showed some degree of mediastinal or pulmonary disease. In 3 cases the changes were minor and probably not significant, possibly representing a nonspecific inflammatory reaction and having no relation to the erythema nodosum; in 3 others slight, but definite

hilar enlargement of the nodular type were found. In 6 cases moderate to pronounced hilar enlargement was present. Hyperplastic tuberculosis was the proven aetiological factor in only 2 cases of the latter group, but in at least 4 others tuberculosis is believed to be the cause of the erythema nodosum and hilar adenopathy. In none of the record is there evidence that the erythema nodosum and hilar adenopathy were considered as one symptom complex. The difficulty of distinguishing between inflammatory and neoplastic mediastinal masses is again demonstrated. It would seem, therefore, that a history of coexisting or recent erythema nodosum should be of value in establishing the nature of the adenopathy since even in adults such a combination is most likely to be tuberculous in nature and such a history given to the radiologist may make an otherwise difficult diagnostic problem easier. Roentgenograms and follow-up studies are recommended in all cases of erythema nodosum. It is also pointed out that radiation therapy has a place in the treatment of hyperplastic tuberculous hilar and mediastinal lymphadenopathy.—*Mediastinal and Pulmonary Changes in Erythema Nodosum, L. W. Paul & E. A. Pohle, Radiology, August, 1941, 37: 131.*—(*G. F. M.*)

Blast Injury.—A report is given of the pulmonary effects of the blast of high explosives on 17 soldiers. There were 10 severe cases, only 2 of which were associated with injury to the chest, and 7 milder cases, all free from chest injuries. Grave shock and restlessness out of proportion to the apparent degree of injury were the chief symptoms and were associated with dyspnoea, cyanosis and chest pain. Frank haemoptysis or streaking were, at times, present. The physical signs varied but the most frequent signs were bulging of the chest wall with its concomitant limitation of respiratory excursion, congestion and consolidation of the lungs. The bulging of the chest wall was not uncommonly associated with marked abdominal rigidity which in two cases prompted surgical exploration of the abdomen. In both cases negative findings were an unpleasant surprise and the suggestion is made that the abdominal rigidity may perhaps have been caused by the observed haemorrhages into the intercostal muscles and the sheaths of the intercostal nerves which supply the anterior abdominal wall. The pulmonary congestion and consolidation were due to intestinal and alveolar haemorrhages which at times gave the appearance, at the postmortem examination, of an extensive infarction of the lungs. These intrapulmonary hemorrhages accounted for the characteristic heavy mottling of the lung fields on roentgenographic examination. The roentgenographic appearance resembled a patchy pneumonia consolidation. In several of the patients who survived the initial injury and shock, secondary bacterial invasion of the lungs occurred with the development of clinical features of pneumonia. It was therefore suggested that chemotherapy be instituted as soon as the patient recovered a little from the initial trauma. The most striking feature in the autopsies was the effusion of blood which varies from capillary oozing to large haemorrhages. This effusion was found within the lungs, pleural spaces, intercostal muscles, tissues of the neck around the carotid sheaths and mediastinum. Frequently it was unassociated with the rupture of capillaries or venules and was ascribed to a diapedesis of cellular elements of the blood during the stage of severe shock. Rupture of the elastic tissue of the lung was noted in the most affected areas. Secondary infection with streptococci and bronchopneumonia were also found. Evidences of fat embolism were absent. Treatment was directed towards combating shock by heat, morphine, oxygen and transfusions. Morphine was used because it was felt that the restlessness and distress of the patient were far more dangerous than was the danger of the use of the drug in pulmonary damage and shock. Transfusions of plasma rather than whole blood were indicated. Sulfapyridine was given prophylactically to 5 patients but it had no effect in preventing the development of pneumonia in the dosage given. Abdominal operations are contraindicated unless the signs point to a specific

lesion. A general anaesthetic should be postponed as long as possible. The patients should not be moved more than is absolutely necessary.—*Blast Injury of the Lungs, J. N. O'Reilly, Lancet, October 11, 1941, 2: 423.*—(*J. B.*)

Pulmonary Concussion.—A case of pulmonary concussion due to high explosive is described. The patient was a twenty-three year old soldier who had been sleeping in a wooden hut on which a bomb fell. There is no record of immediate symptomatology but upon being removed to a nearby hospital he was found to be in a severe state of shock and also dyspnoeic and cyanotic. Physical examination revealed coarse râles throughout both lung fields. A radiograph of the chest showed a diffuse, mottled, woolly shadow throughout the left lung and involving at least two-thirds of the right lung. There was no evidence of external trauma. Thirty-nine hours after the accident the patient seemed improved and was transferred to another hospital. On admission there the picture of shock became evident again, but there was also evidence of pulmonary congestion and oedema. Venesection brought about temporary relief but the soldier died fifty-one hours after his exposure to the concussion. Postmortem examination failed to reveal any evidence of external injury. There were many petechial haemorrhages between the parietal pleura and the thoracic wall and also beneath the visceral pleura. Both lungs were large. At least two-thirds of the bulk of the left and about half of the right lung were consolidated. These consolidated areas were the color of dark venous blood; the edges were bright red, fading into normal lung structure. On histological examination of the consolidated lungs the macroscopical changes were seen to be largely the consequence of widespread intraälveolar capillary haemorrhage with a picture strongly resembling that seen in haemorrhagic infarction. There was no microscopical nor macroscopical evidence of tracking of air through, as one might expect if there had been alveolar rupture of any degree. The above two facts lead one to believe that the haemorrhage in these cases arises from diapedesis or from the rupture of grossly dilated capillary vessels. In retrospect the treatment in this case should have been first venesection for the pulmonary oedema, followed soon by plasma infusions for the shock. In any case these patients should not be moved for at least forty-eight to seventy-four hours. —*A Case of Pulmonary Concussion ("Blast") Due to High Explosive, G. Hadfield & R. V. Christie, Brit. M. J., January 18, 1941, 1: 77.*—(*D. H. C.*)

Pulmonary Haemorrhage and Trauma.—A review is made of the postmortem findings of haemorrhage into the lungs in cases of death due to trauma. Peacetime injuries involving such a finding are as follows: Cases where blood has been inhaled after haemorrhage from lesions of the upper air passages or nasopharynx. In these the lung tissue is undamaged and the main findings are wedge-shaped areas of haemorrhage with lobulated margins. Next are the cases where there is local haemorrhage associated with a laceration due to penetration of the chest wall. In these cases there is usually an associated haemothorax and pneumothorax. Thirdly are the cases, usually following road accidents where there has been a violent impact by a moving vehicle. This is most frequent in children. There need be no external injury and yet internal damage is severe. Quite often there is an associated separation of lung tissue. Microscopically the outstanding feature is rupture of lung tissue and haemorrhage into the damaged area. Finally there is a large group where death has followed asphyxia. In these cases the outstanding findings consist of punctiform haemorrhagic patches, dark in color and varying in size from 1–5 mm. in diameter. They are most common at the root of the lung and subpleurally. Wartime injuries follow closely the general pattern outlined above. Flying missiles produce penetrating chest wounds with lung lacerations. Forcible hurling of victims following explosions may produce contusions of the lung such as are all too familiar in road accidents—without evidence of external injury. Cases of

asphyxia are frequent under bombing conditions. In those cases where there is an inhalation of a large amount of dust the findings are the same as those with asphyxia in peacetime—congestion, scattered small haemorrhages throughout and Tardieu's spots on the pleural surface. In cases of compression asphyxia where the victim has been buried under debris, death has presumably been slow, with attempts at respiration. In these cases, rib markings are observed with emphysematous bullae at the margins. In addition the scattered haemorrhages and Tardieu spots are noted. The final group considered has no parallel in peacetime. These cases have all been found near the site of explosion of a bomb and as a result the condition may be called "haemorrhagic pulmonary concussion". Subpleura haemorrhages are not conspicuous and haemorrhagic rib markings are not present. The haemorrhagic areas are scattered through, and often deep in, the substance of the lung. The haemorrhage is fresh and clotting has not occurred. There is widespread and intense capillary congestion with haemorrhage into the walls of the small bronchioles but none into the larger bronchi.—*Haemorrhage into the Lungs in Cases of Death Due to Trauma, J. M. Ross, Brit. M. J., January 18, 1941, 1: 79.*—(*D. H. C.*)

Patent Ductus.—A patent ductus was diagnosed incidentally, during a routine medical examination, in a girl seventeen years old and a continuous heart murmur with increasing systolic intensity was found. The operation was performed as a prophylactic measure to possible future complications (endocarditis, heart failure, etc.). Under intratracheal gas-oxygen-cyclopropane anaesthesia the left pleura was opened in the second intercostal space, second and third cartilages were divided. An incision of the mediastinal pleura was made over the pulmonary artery and two silk ligatures were placed around the patent ductus. The recovery was uneventful and a month after the operation the heart sounds were normal.—*Ductus arteriosus. Ligadura del conducto arterial persistente. A propósito de un caso operado con éxito, T. Castellano, I. M. Allende & E. Finochietto, Prensa méd. argent., April, 1941, 28: 825.*—(*J. A. T.*)

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